Mumbai University

QUESTION PAPER

April – 2015

[B.Sc.IT – SEMESTER: VI]
(CBSGS – 75:25 PATTERN)

- ❖ **INTERNET TECHNOLOGIES**
- ❖ **DATA WAREHOUSING**
- ❖ **IPR AND CYBER LAWS**
- ❖ **PROJECT MANAGEMENT**
- ❖ **GEOGRAPHIC INFORMATION SYSTEMS**

KAMAL T UNIVERSE

Mumbai University

[CBSGS – 75:25 Pattern]
(April – 2015)

PAPER – I

INTERNET TECHNOLOGIES

Time: 2 ½ Hours   **Total Marks:** 75

N.B.: **(1)** *All Question are Compulsory.*
   (2) *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
   (3) *Answer To The Same Question Must Be Written Together.*
   (4) *Number To The Right Indicates Marks.*
   (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
   (6) *Use of Non – Programmable Calculator is allowed.*

Q.1   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)
(A)   What are the functions of the Transport Layer in the OSI Model?   **(5)**
(B)   In a block of Addresses, we know the IP Address of one host is 110.23.120.14/20.What are the First   **(5)**
         Address (Network Address) and the Last Address (Limited Broadcast Address) in this block.
(C)   How does the IPv4 Protocol work over ATM Networks?   **(5)**
(D)   Compare an IPv4 Header with an IPv6 Header.   **(5)**

Q.2   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)
(A)   Explain the Cache Control Module and the Cache Table in the ARP Package.   **(5)**
(B)   State and explain the three Phases that a Mobile Host goes through in Order to Communicate with a   **(5)**
         Remote Host.
(C)   Explain the Source Quench Message and the Time Exceeded Message in ICMP.   **(5)**
(D)   State and explain the solutions to the Two Node instability in RIP.   **(5)**

Q.3   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)
(A)   Explain the Send and the Receive Windows used in TCP for Flow Control.   **(5)**
(B)   Explain the Server States of the TCP State Transition.   **(5)**
(C)   Explain the Services provided by UDP.   **(5)**
(D)   Explain the Control Flags, Window Size and Urgent Pointer Fields in the TCP Header.   **(5)**

Q.4   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)
(A)   Explain the Services offered by SCTP to the Application Layer Processes.   **(5)**
(B)   Explain the DHCP Client Transitions with the help of a diagram.   **(5)**
(C)   Explain the Association Establishment in SCTP.   **(5)**
(D)   What are the two kinds of resolution used by DNS for Name-Address Resolution?   **(5)**

Q.5   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)
(A)   Explain the Four Control characters used in TELNET for Option Negotiation.   **(5)**
(B)   Explain the different kinds of TFTP Messages.   **(5)**
(C)   Write a note on HTTP.   **(5)**
(D)   Explain the three attributes of Communication over Data Connection in FTP.   **(5)**

Q.6   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)
(A)   Write a note on MIME.   **(5)**
(B)   Explain the Commands and Responses used in SMTP to transfer Messages from the Client to Server.   **(5)**
(C)   Explain the two techniques used for Traffic Shaping to improve Quality of Service.   **(5)**
(D)   Explain the characteristics of Real-Time Audio/Video Communication.   **(5)**

[TURN OVER]

Q.7 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A) What are the four levels of addresses used in the internet having TCP/IP Protocols? **(5)**

(B) State and explain the four types of links in OSPF. **(5)**

(C) What are the different Timers used in TCP? **(5)**

(D) Differentiate between a TCP Header and an SCTP Header. **(5)**

(E) Write a note on Cookies used with HTTP. **(5)**

(F) State and explain the different types of Messages in BGP. **(5)**

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[CBSGS – 75:25 Pattern]
(April – 2015)

Paper - III

Data

Warehousing

Time: 2 ½ Hours   **Total Marks:** 75

N.B.: **(1)** *All Question are Compulsory.*
     (2) *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
     (3) *Answer To The Same Question Must Be Written Together.*
     (4) *Number To The Right Indicates Marks.*
     (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
     (6) *Use of Non – Programmable Calculator is allowed.*

Q.1   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What are Operational Databases? Explain the basic characteristics of Data Warehouse.   **(5)**
(B)   Describe Virtual Data Warehouse and Central Data Warehouse.   **(5)**
(C)   Explain the various types of additivity of facts with examples.   **(5)**
(D)   Explain Star Schema Model with the help of diagram.   **(5)**

Q.2   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What is a Listener? How is it configured?   **(5)**
(B)   What is Design Center? Explain the functions of Project Explorer and Connection Explorer Windows.   **(5)**
(C)   Explain OWB Components and architecture with diagram.   **(5)**
(D)   Explain the various steps involved in installing Oracle Database Software.   **(5)**

Q.3   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What is a Target Schema? How is a Target Module created?   **(5)**
(B)   What is Time Dimension? Discuss various steps involved in creating a Time Dimension using Time   **(5)**
          Dimension Wizard.
(C)   Explain the various characteristics of a dimension.   **(5)**
(D)   Write notes on: **(5)**
          (i)   *Slowly Changing Dimension*
          (ii) *Surrogate Keys*

Q.4   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What is ETL? Explain the importance of Source Target Map.   **(5)**
(B)   What is staging? What are its benefits? Explain the situation where staging is essential.   **(5)**
(C)   Briefly explain the functions of filter and joiner operators.   **(5)**
(D)   What are Data Flow Operators? Explain the concept of Pivot Operator with example.   **(5)**

Q.5   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What is the purpose of main attribute group in a cube operator? Discuss about dimension attributes   **(5)**
          and measures in the cube.
(B)   What is Expression Operator? Explain the mapping of a date field SALE_DATE to a numeric filed   **(5)**
          DAY_CODE by applying TO_CHAR() and TO_NUMBER() functions through expression operator. The
          string format for TO_CHAR() function is 'YYYMMDD'.
(C)   Explain the concept of validating and generating objects.   **(5)**
(D)   What is Object Deployment? Explain the functions of Control Center Manager.   **(5)**

Q.6   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What is Recycle Bin? Describe the features of warehouse builder Recycle Bin Window.   **(5)**
(B)   Explain Data Sparsity and Data Explosion.   **(5)**
(C)   What is a Snapshot? Explain Full Snapshot and Signature Snapshot.   **(5)**
(D)   Explain the export feature of Metadata Loader.   **(5)**

[TURN OVER]

Q.7   **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

(A)   Write any five significant differences between OLTP Database and Data Warehouse Database.   **(5)**

(B)   What are the Hardware and Software requirements for installing Oracle Warehouse Builder?   **(5)**

(C)   Explain Multidimensional implements o Data Warehouse.   **(5)**

(D)   What are Mapping Operators? Explain any two source target mapping operators in detail.   **(5)**

(E)   What are the two ways of Validating Repository objects in Objects Editor? Briefly explain various deploy actions of Object Details Window.   **(5)**

(F)   What are the matching strategies for synchronizing workspace objects with its corresponding mapping operator? Explain inbound and outbound synchronization.   **(5)**

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PAPER - IV

ELECTIVE

IPR AND

CYBER LAWS

Time: 2 ½ Hours   **Total Marks:** 75

N.B.: **(1)** *All Question are Compulsory.*
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(3) *Answer To The Same Question Must Be Written Together.*
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(5) *Draw Neat Labeled Diagrams Wherever Necessary.*
(6) *Use of Non – Programmable Calculator is allowed.*

Q.1   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What is the Objective behind Patent Law?   **(5)**
(B)   Explain the method of Drafting Patent Specification.   **(5)**
(C)   What is a Trademark? What are its functions?   **(5)**
(D)   What is a Copyright? What are its characteristics?   **(5)**

Q.2   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   Explain Computer software as Intellectual Property and its protection.   **(5)**
(B)   Explain SCPA Semiconductor Chip Protection Act, in detail.   **(5)**
(C)   Explain the Procedure for Registration of Domain Names.   **(5)**
(D)   What are Digital Copyright issues?   **(5)**

Q.3   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   Discuss transfer of Patent Rights in the form of Assignment.   **(5)**
(B)   What are different kinds of Assignments?   **(5)**
(C)   Explain "Protecting good will through Copyrights".   **(5)**
(D)   What are essential factors for Infringement of Trademark?   **(5)**

Q.4   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What are disadvantages of IP Licensing?   **(5)**
(B)   Explain in brief the Civil Remedies in enforcing Intellectual Property Rights. About Enforcing IPR.   **(5)**
(C)   Explain practical aspects of Licensing.   **(5)**
(D)   Classify and explain the Licensing Agreement.   **(5)**

Q.5   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   Explain the scope of Cyber Laws.   **(5)**
(B)   What is UDRP (Uniform Domain-Name Dispute-Resolution Policy)? Explain.   **(5)**
(C)   Explain briefly the issues of Enforcement of rights relevant to Patent Protection in Digital Media.   **(5)**
(D)   What are the different roles of Certifying Authorities? Explain.   **(5)**

Q.6   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   When was IT Act, 2000 amended? Enlist the major changes incorporated in the amendments.   **(5)**
(B)   What does chapter 5 of IT Act, 2000, "Secure Electronic Records & Secure Digital Signatures" specify?   **(5)**
         Explain briefly.
(C)   What are the conditions under which Intermediary gets an exemption from liability?   **(5)**
(D)   What does chapter 9 of IT Act, 2000, "Penalties & Adjudication" cover?   **(5)**

[TURN OVER]

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QUESTION PAPER

IPR AND CYBER LAWS
(APRIL – 2015 | CBSGS – 75:25 PATTERN)

B.Sc.IT
(SEMESTER – VI)

Q.7 **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

(A) List out the basic principles of Design Rights. **(5)**

(B) Explain in brief the enforcement of Data Protection. **(5)**

(C) What are the rights granted for Registration of Design? **(5)**

(D) Explain how Licensing for Technology is considered. **(5)**

(E) Explain Copyright issue in India. Explain Copyright in WWW. **(5)**

(F) What is Cyber Appellate Tribunal? What are its Powers? **(5)**

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[CBSGS – 75:25 Pattern]
(April – 2015)

PAPER - IV

ELECTIVE

Project

Management

Time: 2 ½ Hours   **Total Marks:** 75

N.B.: **(1)** *All Question are Compulsory.*
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     (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
     (6) *Use of Non – Programmable Calculator is allowed.*

Q.1   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A) Discuss the significance, of reducing the product size, on ROI (Returns On Investment). Explain, briefly, **(5)**
how the product size can be reduced.0

(B) Discuss the key practices that improve overall Software Quality. **(5)**

(C) Discuss Boehm's Staffing Principles. **(5)**

(D) Evolution of Software Economics over three Generations. **(5)**

Q.2   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A) Discuss the Lifecycle, defined for Modern Software Development. **(5)**

(B) Define the term "Artefacts". List the five sets of artefacts. Define the following: VISION DOCUMENT, **(5)**
Software Architecture Description & Release Specifications.

(C) Discuss three different aspects of Software Architecture from a Management Perspective. **(5)**

(D) Map the Process Exponent Parameters of COCOMO to top 10 principles of Modern Process. **(5)**

Q.3   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A) What do you mean by Workflow? Discuss briefly its types. **(5)**

(B) Write a short note on Major Milestone. **(5)**

(C) Define Work Breakdown Structure. Give the difference between Conventional and Evolutionary WBS. **(5)**
List issues related to Conventional WBS.

(D) Explain Forward-Looking Approach for Cost and Schedule Estimating Process. **(5)**

Q.4   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A) Discuss briefly, default roles in a software Line-of-business organization. **(5)**

(B) Define Process Automation. Mention its significance. Also, mention the extent of automation at each **(5)**
level of the process.

(C) Explain mapping between process workflows and software development tools. **(5)**

(D) "The Project Environment Artefacts evolve through three Discrete States". Explain. **(5)**

Q.5   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A) Define metrics and discuss characteristics of a Good Metric. **(5)**

(B) Write a short note on "Earned Value System". **(5)**

(C) Discuss the "Tailoring" concept in the context of software development. Explain the two Primary **(5)**
Dimensions of Process Variability.

(D) Explain the process discriminators resulting from differences in process maturity. **(5)**

Q.6 ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A) Discuss the five recurring issues of Conventional Process. How are they resolved by Modern Process Framework?   **(5)**

(B) How is risk resolution carried out in the Iterative Process? What is its advantage?   **(5)**

(C) How, balancing the top 10 Software Management Principles, Achieve Balance In Software Economics Equation.   **(5)**

(D) Discuss nine best practices of Software Management.   **(5)**

Q.7 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A) How "Peer Inspection" helps in improving ROI? Explain.   **(5)**

(B) Explain in detail "Transition phase" of Software Development Life Cycle with the following details: Primary Objectives, Essential Activities & Evaluation Criteria.   **(5)**

(C) What is the significance of Periodic Assessments? Discuss the contents of STATUS ASSESSMENT REVIEW.   **(5)**

(D) Discuss the primitive components of a Software Change Order.   **(5)**

(E) Write a short note on SPCP (Software Project Control Panel).   **(5)**

(F) Write a short note on "Next Generation Cost Models".   **(5)**

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Geographic Information System

Time: 2 ½ Hours   **Total Marks:** 75

N.B.: **(1)** *All Question are Compulsory.*
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   (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
   (6) *Use of Non – Programmable Calculator is allowed.*

Q.1   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   List and explain the components of GIS.   **(5)**
(B)   Convert the following into degrees: **(5)**
   (i) $45^0\ 15''\ 45''$
   (ii) *1745 rad*

(C)   Draw a diagraph from the following adjacency and Incidence Matrix.   **(5)**

	11	12	13	14
11	0	1	0	1
12	0	0	1	0
13	1	0	0	0
14	0	1	1	0

	1	2	3	4	5	6
11	-1	1	0	1	0	0
12	0	-1	1	0	-1	0
13	1	0	-1	0	0	-1
14	0	0	0	-1	1	1

(D)   Explain the Region Data Model with suitable example.   **(5)**

Q.2   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   List various data sources that can be used to create new Geospatial Data. Explain any one.   **(5)**
(B)   Explain the Map-To-Map and Image-To-Map Transformation.   **(5)**
(C)   Write the four types of transformation methods. Also show their effects on a Rectangular Object.   **(5)**
(D)   What is the role of control points in Affine Transformation? Give suitable example.   **(5)**

Q.3   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   Explain the two types of attribute tables.   **(5)**
(B)   Explain Network Database with suitable example.   **(5)**
(C)   List different types of relationships used in relational database. Give example of each.   **(5)**
(D)   Explain: **(5)**
   (i) *Dot Map* **(ii)** *Choropleth Map*

Q.4   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What is Data Exploration? Explain.   **(5)**
(B)   What are the different types of graphs used for Data Exploration?   **(5)**
(C)   Explain Spatial Aggregation.   **(5)**
(D)   What is the output of the following for a statement (slope = 2) OR (NOT(Aspect=1))   **(5)**

3	2	1	1	1	2	2	2
2	3	3	3	3	3	1	1
1	2	3	3	2	1	1	3
2	2	3	1	1	1	2	2
2	2	2	1	1	1	1	1
3	2	2	1	2	1	2	3
3	2	3	3	3	2	2	3
2	2	2	1	3	1	3	3

1	2	2	2	1	1	1	2
2	3	1	1	2	2	1	1
1	2	3	3	2	1	1	3
2	2	3	1	1	1	2	2
2	2	2	1	1	3	3	1
3	1	2	1	1	1	2	3
3	1	3	3	1	2	2	3
1	1	1	2	3	2	2	3

[TURN OVER]

Q.5 ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A) What is Buffering? Explain with example. **(5)**

(B) Explain Slivers from Overlay Operation. **(5)**

(C) What do you mean by Pattern Analysis? Explain Nearest Neighbour Analysis. **(5)**

(D) Explain the following map manipulation operations with example: **(5)**

  (i) *Dissolve*

  (ii) *Clip*

Q.6 ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A) What is Spatial Interpolation? List and explain the types of Spatial Interpolation. **(5)**

(B) Explain trend surface model with suitable example. **(5)**

(C) Explain the Inverse Distance Weighted Interpolation Local Method. **(5)**

(D) Define following: **(5)**

  (i) *Nuggest*

  (ii) *Range*

  (iii) *Sill*

  (iv) *Partial Sill*

  (v) *Anisotrophy*

Q.7 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A) Explain with suitable example Cell-By-Cell Encoding Raster Data Structure. **(5)**

(B) Explain the Bilinear Interpolation resampling method with suitable example. **(5)**

(C) Write a short note on Map Production. **(5)**

(D) Explain Spatial Data Query with suitable example. **(5)**

(E) Explain the Raster Data Generalization operation with suitable example. **(5)**

(F) Explain Universal Kriging. **(5)**